

**AMENDMENTS TO THE CLAIMS**

The following listing of claims replaces all prior versions and listings of claims in the application.

1- 20. **(Canceled)**

21. **(Previously Presented)** A repeater for receiving and retransmitting digital data, the repeater comprising:

a receiver adapted to receive a data signal;

a signal processor coupled to the receiver, the signal processor being adapted to perform processing tasks on the data signal;

a transmitter coupled to the signal processor, the transmitter adapted to receive the data signal from the processor and to transmit the data signal; and

out-of-band logic coupled to the signal processor, the out-of-band logic configured to extract and insert out-of-band data onto the data signal, wherein the out-of-band logic is configured to:

extract out-of-band data from the data signal, wherein the out-of-band data includes digital diagnostic data from at least one remote repeater;

concatenate data corresponding to digital diagnostic data for the repeater to the out-of-band data such that the out-of-band data includes the digital diagnostic data for the repeater and the at least one remote repeater; and

insert the out-of-band data including the data corresponding to digital diagnostic data for the repeater and the at least one remote repeater onto the data signal.

22. **(Canceled)**

23. **(Original)** The repeater of claim 21, wherein the out-of-band logic is a microprocessor.

24. – 25. **(Canceled)**

26. (New) The repeater of claim 21, further comprising:  
an additional receiver coupled to the signal processor and to the out-of-band logic, the additional receiver being adapted to receive an additional data signal; and  
an additional transmitter coupled to the signal processor and to the out-of-band logic, the additional transmitter adapted to receive the additional data signal from the processor and to transmit the additional data signal.
27. (New) The repeater of claim 26, wherein the transmitter and the additional transmitter transmit the data signal and additional data signal, respectively, in opposite directions.
28. (New) The repeater of claim 21, wherein the out-of-band data includes identification and/or authentication information.
29. (New) The repeater of claim 21, wherein the digital diagnostic information includes information concerning another repeater and/or an optical link associated with the repeater.
30. (New) The repeater of claim 21, wherein the processing tasks include one or ore of removing noise, and boosting signal power.
31. (New) The repeater of claim 21, wherein the repeater includes a hardware embedded encryption key, and the out-of-band data includes identification and/or authentication information.
32. (New) The repeater of claim 21, wherein the signal processor and the out-of-band logic are connected in parallel between the transmitter and the receiver.
33. (New) A network that includes an additional repeater coupled to the repeater of claim 21.

34. (New) The repeater of claim 21, wherein the digital diagnostic information includes configuration information.

35. (New) The repeater of claim 34, wherein the configuration information includes one or more of a data communication rate, and information concerning transmitter power.

36. (New) The repeater of claim 21, wherein the repeater is adapted to determine its compatibility with another device of a network by requesting identification information from that device.

37. (New) The repeater of claim 36, wherein the identification information comprises information concerning a manufacturer of the device.

38. (New) The repeater of claim 21, wherein the out-of-band data includes information about optical loss of an optical link associated with the repeater.